

UNCLASSIFIED

AD NUMBER

AD457874

LIMITATION CHANGES

TO:

Approved for public release; distribution is unlimited.

FROM:

Distribution authorized to U.S. Gov't. agencies and their contractors;
Administrative/Operational Use; 08 JAN 1964.
Other requests shall be referred to Naval Submarine Research Laboratory, New London, CT.

AUTHORITY

USNMRL ltr, 3 Aug 1966

THIS PAGE IS UNCLASSIFIED

U.S. NAVAL MEDICAL RESEARCH LABORATORY



Submarine Base, New London, Conn.

Vol. XXIII, No. 3

REPORT NO. 421

8 January 1964

BEHAVIORAL PERIODICITY:

I. Bibliography of Literature Pertaining to Human Beings

by

Michael Greenwood

and

Benjamin B. Weybrew

Bureau of Medicine and Surgery, Navy Department
Research Project MR005.14-2100-3.09

APPROVED FOR PUBLIC
RELEASE - DISTRIBUTION
UNLIMITED

BEHAVIORAL PERIODICITY: I. BIBLIOGRAPHY OF LITERATURE
PERTAINING TO HUMAN BEINGS

by

Michael Greenwood, M.S.

and

Benjamin B. Weybrew, Ph.D.

U. S. NAVAL MEDICAL RESEARCH LABORATORY REPORT NO. 421

Bureau of Medicine and Surgery, Navy Department
Research Project MR005.14-2100-3.09

Submitted by:

Benjamin B. Weybrew, Ph.D.
Head, Personnel Assessment Branch

Approved by:

Walter R. Miles, Ph.D.
Scientific Director

Released by:

George F. Bond
CAPT MC U. S. NAVY
Officer-in-Charge

SUMMARY PAGE

THE PROBLEM

To compile a bibliography of research in the area of behavioral periodicity as it pertains to human beings.

FINDINGS

A bibliography containing 405 entries was compiled and indexed. It is the first of a projected series of three—Number Two will concern animal subjects, and Number Three will be more physiologically and less behaviorally oriented, dealing with both human and infrahuman experimentation.

APPLICATIONS

This bibliography will be a reference source for the use of research personnel interested in cyclical patterns of physiological processes and behavior.

ADMINISTRATIVE INFORMATION

This bibliographic compilation was completed as a part of Bureau of Medicine and Surgery's Research Project MR005.14-2100-3 (Stress and Fatigue Research). It has been designated as Report No. 9 on the indicated Subtask and was approved for publication on 8 January 1964.

Published by the Naval Medical Research Laboratory
For Official Use Only
(May be released as of 1 May 1964)

PREFACE

This bibliography has resulted from a survey of the literature pertaining to behavioral periodicity in human beings. It is the first in a projected series of three. Bibliography number two will pertain to behavioral periodicity in infrahuman subjects, while bibliography number three will be more physiologically and less behaviorally oriented, dealing with both human and infrahuman experimentation.

In a sense, the compilation of a bibliography in a given scientific area constitutes a projective test for the compilers, who must make the decision whether or not to include each reference. It is not denied therefore that in perusing and selecting entries from the now voluminous literature pertaining to cyclical tendencies of biological processes, the compilers exercised the bias that behavioral variations over time (cyclic or otherwise) made up the most important class of variables in this area.

Although this bibliography does include a number of entries published in a foreign language, no systematic survey of the foreign journals has been attempted. Because of the large number of references to rhythm as it pertains to music, phonetics, and the like, this general area has with but a few exceptions been excluded.

All references are listed alphabetically by author. However, for the convenience of selecting references by subject matter, the bibliography is cross-referenced by number. In that the compilers have not had the opportunity to read all references included herein, the cross referencing and categorization by subject matter may be inaccurate in several instances; it is meant only as a rough guide.

Since this is the first version of the bibliography, it is more than likely that a number of pertinent entries have been overlooked. In order that this bibliography be as useful a tool as possible to all who are interested in this area, notification of pertinent omissions and new articles would be greatly appreciated.

Appendix A of this report, lists several related bibliographies which hopefully will give more complete coverage of any area sparsely covered herein.

Note: This bibliography was somewhat delayed in processing and publication. Additional references accumulated during the past several months will be made a part of a subsequent issue.

CROSS INDEX OF BIBLIOGRAPHICAL ENTRIES*

- | | |
|--|---|
| <p>(1) Attention and alertness: 8, 58, 274, 284.</p> <p>(2) Autonomy of rhythm (See also: Pacemakers and biological clocks): 307, 339.</p> <p>(3) Circadian rhythms (Theoretical discussion): 11, 143, 144, 289, 290.</p> <p>(4) Circadian rhythm relative to the hours of childbirth: 69, 183, 198.</p> <p>(5) Circadian variation in infants activity: 164.</p> <p>(6) Modification of circadian rhythms: 29, 49, 145, 161, 212, 235, 237, 261.</p> <p>(7) Planning of work programs: 45.</p> <p>(8) Transient variation in circadian rhythm: 287, 330.</p> <p>(9) Circulatory system (Blood pressure, pulse and heart rates as correlates of behavioral periodicity): 7, 35, 78, 206, 212.</p> <p>(10) Closed biological systems and the problems of feeding: (See also: Human Factors) 47.</p> <p>(11) Developmental (Growth) aspects of rhythm: 16, 18, 24, 48, 57, 61, 162, 164, 184, 241, 333, 389.</p> <p>(12) Diuresis (Urine flow as a correlate of behavioral periodicity): 235, 241, 260, 261, 320.</p> <p>(13) Effects of rhythm on memory: 1, 9, 66.</p> <p>(14) Effects of stress on rhythmical behavior: 107, 134, 391.</p> <p>(15) Environmental influence and/or control of rhythm (endogenous stimulation): 11, 49, 50, 115, 121, 146, 148, 149, 152, 183, 197, 243, 250, 258, 396.</p> | <p>(16) Auditory stimulation: 110, 125.</p> <p>(17) Olfactory stimulation: 125, 132.</p> <p>(18) Visual stimulation: 110, 125, 262, 302, 319.</p> <p>(19) Excretory rhythm (A correlate of behavioral periodicity): 236, 238.</p> <p>(20) Galvanic skin response as an indices of periodicity in behavior: 78, 79.</p> <p>(21) Genetic determination of rhythmical tendencies: 329, 348.</p> <p>(22) Homeostasis (Drive reduction theory and the possible relationship to biological clocks and/or pacemakers): 62.</p> <p>(23) Human factor considerations relative to periodicity:</p> <p>(24) Conditioning astronauts for space flight: 19.</p> <p>(25) Disruption of day night cycles in global flights: 81, 104, 105, 106, 181, 253, 255, 256, 344, 380.</p> <p>(26) Environmental requirements for maintaining man in space: 60, 122, 153, 353.</p> <p>(27) Space flight simulation: 126, 334.</p> <p>(28) Watch schedules on submarines: 207, 211, 364.</p> <p>(29) Individual differences in rhythmical tendencies: 68, 142, 226, 259, 299.</p> <p>(30) Influence of rhythm on work: 97, 98, 120, 154, 323.</p> <p>(31) Life and rhythm: 42, 67, 99, 194.</p> <p>(32) Models for evaluating and predicting behavioral periodicity: 141, 190, 217, 285, 288, 296, 313, 325, 331, 335, 383, 399, 404.</p> |
|--|---|

*It is to be noted that the subject matter headings in the cross index are alphabetized, each heading being preceded by a number in parenthesis, the Index Number. Following the entries in the bibliography proper (See page 1) will be found single or multiple index numbers from which the user by referring back to the cross index can locate the entries pertaining to the same subject. The numbers not in parenthesis following each cross index heading refer to individual entries (on the same subject) in bibliographical compilation, which begins on page 1.

- (33) Neuro-psycho-physiological considerations for behavioral periodicity: 44, 58, 118, 168, 169, 249, 379.
- (34) EEG and the central effects of the rhythm sense: 10, 24, 375.
- (35) Effects of anesthesia on rhythm: 119.
- (36) Effects of epilepsy on the rhythmical sense: 28, 137, 145, 225, 229, 230.
- (37) Effects of regressive electro shock on the rhythm sense: 102, 131.
- (38) Relationship between tapping rhythms and neuropsychiatric conditions: 266, 267, 342.
- (39) Rhythmical variation in the autonomic nervous system: 165.
- (40) Variations in auditory sensitivity: 220, 221, 243.
- (41) Pacemakers and/or biological clocks and their relationship to behavior: 51, 52, 63, 68, 166, 167, 208, 209, 286, 330, 332.
- (42) Resetting the biological clock (See also circadian rhythm): 59.
- (43) Perception: 26, 56, 90, 132, 233.
- (44) Errors in temporal perception: 17, 340.
- (45) Perception of motion, relative to time intervals: 192.
- (46) Performance variability: 72, 83, 84, 111, 114, 172, 195, 210, 211, 248.
- (47) Activity level and performance: 12, 93, 116, 178.
- (48) Fatigue and efficiency as a function of the work rest cycle: 2, 25, 29, 33, 36, 40, 64, 95, 133, 180, 186, 196, 213, 222, 223, 228, 240, 252, 268, 273, 297, 320, 327, 356, 357, 366, 387.
- (49) Impairment in performance due to stress and fatigue: 80, 107, 134, 391.
- (50) Skill and efficiency: 136, 251, 291, 382, 395, 402, 403.
- (51) Variation in mental ability: 9, 34, 37, 71, 86, 176.
- (52) Variation in motor performance: 22, 23, 56, 123, 170, 174, 177.
- (53) Eye blink: 34.
- (54) Reaction time: 4, 35, 201, 204, 279, 317, 392.
- (55) Periodicity as a learned phenomena (See also: development): 26.
- (56) Personality correlates of periodicity: 68, 139, 239, 270, 281, 405.
- (57) Abnormal personality manifestations: (See also: sensory deprivation): 28, 38, 55, 74, 218, 376.
- (58) Affective characteristics of periodicity: 82, 232, 245, 274, 358.
- (59) Periodicity and personality relative to the menstrual cycle: 5.
- (60) Psychometrics: 18, 92, 94, 101, 109, 280, 292, 304, 400.
- (61) Psychophysiological processes related to rhythm: 54, 103, 208, 209, 316.
- (62) Relationship between periodicity and accidents: 135.
- (63) Relationship of rhythm to health and medical practice: 87, 147, 173, 277, 282, 370, 371.
- (64) Rhythm (Theoretical discussion of the topic): 13, 41, 75, 77, 113, 150, 155, 171, 179, 182, 187, 188, 193, 263, 275, 294, 303, 314, 315, 324, 359, 368, 369, 372, 373, 374, 377, 378, 381, 388, 393, 394, 401.
- (65) Rhythm sense in primitive people: 265.
- (66) Rhythmical effects of kinaesthesia: 56, 191, 262, 301, 318, 339.
- (67) Sensory deprivation—Invariant environments (See Appendix A): 31, 73, 74, 122, 153, 231, 305.
- (68) Prolonged invariance as encountered in realistic situations: (See also human factors): 3, 94, 96, 199, 236, 385.

- (69) Sleep-wake cycles: 39, 65, 175, 185, 205, 207, 214.
- (70) Abnormal sleeping schedules, sleep deprivation and insomnia: 10, 35, 38, 70, 71, 91, 112, 242, 264, 360, 361, 376.
- (71) Evaluation of the quality and quantity of sleep-effects of sleep on nervous stability: 272, 311.
- (72) Patterns of dreaming: 215.
- (73) Psychology of sleep: 200.
- (74) Seasonal and environmental effects on the sleep wake cycle: 202, 234.
- (75) Sleeping routines in infants; 12, 213, 309.
- (76) Stuttering (rhythm as a distraction to stuttering): 20, 341.
- (77) Synchronization and rhythm: 88, 189.
- (78) Temperature (Body temperature as a correlate of behavioral periodicity): 27, 29, 40, 102, 127, 160, 163, 201, 203, 204, 206, 210, 211, 257, 264, 352, 365, 379, 390.
- (79) Temporal base of rhythm: 53, 89, 244, 367.
- (80) Temporal estimation: 14, 65, 108, 125, 129, 276, 345, 397.
- (81) Absolute impression of temporal intervals: 6, 278.
- (82) Consciousness and the sense of time: 300.
- (83) Difficulty of ongoing activity relative to temporal estimation: 156, 158.
- (84) Duration of interval relative to temporal estimation: 76.
- (85) Effects of activity on temporal estimation: 279, 293, 317.
- (86) Effects of delay on the estimation of time: 32, 224.
- (87) Individual differences in temporal estimation: 398.
- (88) Influence of occupation on temporal estimation: 140.
- (89) Measurement of temporal estimation: 216, 295.
- (90) Motivational effects on temporal estimation: 30, 100, 157, 158, 219.
- (91) Physiological functions bearing on temporal estimation: 21, 124, 310, 336, 384.
- (92) Sex differences in the estimation of time: 130, 246, 338, 363.
- (93) Smallest perceptible time intervals: 90, 128, 326, 355.
- (94) Spatial symbols in the estimation of time: 138, 159, 254.
- (95) Temporal estimation after sleep: 43.
- (96) Temporal estimation and visual stimuli: 269.
- (97) Temporal estimation based on auditory stimulation: 340.
- (98) Temporal estimation of filled and empty time: 347.
- (99) Theory of temporal estimation: 227, 328, 386.
- (100) Time estimation and motion: 15.
- (101) Time sense (Theoretical discussion): 151, 159, 247, 254, 271, 283, 298, 306, 308, 322, 337, 346, 349, 350, 358, 363, 399.

1. Adams, H. F. The effect of rhythm on memory. *Psychol. Rev.*, 1915, 22: 289-298. (13)
2. Adams, O. S. Human performance as a function of the work rest cycle. Wright-Patterson A. F. B., Ohio, March 1960. (Proj. 7184; Task 71582) (WADD TR 60-248) Unclassified Report. ASD Technical Report 61-720, Nov., 1961. (48)
3. Adolph, E. F. & assoc. Physiology of man in the desert. New York: **Inter Science Publ.** 1947, Pp 357. (68)
4. Aleschsieff, N. Reaktionszeiten bei Durchgangs-beobachtungen. *Philos. Stud.*, 1900, 16: 1-60. (54)
5. Anastasio, M. M. (New York U.) The relationship of selected personality characteristics to the chronology of the menstrual cycle in women. **Dissertation Abst.**, 20, 3823 Abstract 1960 (Mar). (59)
6. Anderson, S. F. The absolute impression of temporal intervals. *Psychol. Bull.*, 1936, 33: 794-795. (81)
7. Andrus, E. C. & Carter, E. P. The genus of normal and abnormal cardiac rhythm. *Science*, 1925, 58: 376-379. (9)
8. Angell, J. & Pierce, A. H. Experimental research upon the phenomena of attention. *Amer. J. Psychol.*, 1892, 4: 528-541. (1)
9. Arai, T. Mental fatigue. **Teach. Coll. Contr. Educ.**, 1912, 54. (13) (51)
10. Armington, J. C. & Mitnick, L. L. Electroencephalogram and sleep deprivation. *J. Appl. Physiol.*, 1959, 14: 247-250. (34) (70)
11. Aschoff, J. Exogenous and Endogenous Components in Circadian rhythms. **Cold Spring Harbor Symposia on Quantitative Biol. Vol 25.** 1960. (3) (15)
12. Aserinsky, E. & Kleitman, N. A motility cycle in sleeping infants as manifested by ocular and gross bodily activity. *J. Appl. Psychol.*, 1955, 8: 11-18. (47) (75)
13. Aulich, W. **Untersuchungen uber das Charakterologische Rhythmus-problem.** Halle; Klinz, 1932. (64)
14. Axel, R. Estimation of time. *Arch. Psychol.*, 1924, 74: 1-72. (80)
15. Babbitts, C. Rhythms in time and motion study. *Advance Mgmt.*, 1943, 8: 6-16. (100)
16. Bagley, W. C. On the correlation of mental and motor ability in school children. *Amer. J. Psychol.* 1901, 12: 193-205. (11)
17. Bald, L., Berrien, F. K., Price, J. B., & Sprague, R. C. Errors in perceiving the temporal order of auditory and visual stimuli. *J. Appl. Psychol.*, 1942, 26: 382-388 (44)
18. Bolinsky, B. An analysis of the mental factors of various age groups from nine to sixty. *Genet. Psychol. Monogr.*, 1944, 23: 191-234. (11) (60)
19. Balke, B. Experimental studies on the conditioning of men for space flights. *Air University Quarterly Reviews*, 1959, 11: 61-75. (24)
20. Barber, V. Studies in the psychology of stuttering, XVI. Rhythm as a distraction in stuttering. *J. Speech Disorders*, 1940, 5: 29-42. (76)
21. Bard, L. Les bases physiologiques de la perception du temps. *J. de Psychol.*, 1922, 19: 119-141. (91)
22. Barnes, R. M. & Mandell, M. E. A study of rhythm in hand motion. *Soc. Adv. Mgmt. J.*, 1938, 3: 107-111. (52)
23. Barnes, R. M. & Mandell, M. E. Studies of hand motions and rhythm appearing in factory work. *Univ. Ia. Stud. Engng. Bull.*, 1939, 12. (52)
24. Barratt, E. S. Relationships of psychomotor tests and EEG variables at three developmental levels. *Percept Mot. Skills*, 1959, 9: 63-66. (11)
25. Bartley, S. H. & Chute, E. **Fatigue and impairment in man.** New York, Mc Graw-Hill, 1947. (48)

26. Baugh, E. Development of rhythm perception through training. Unpublished Master's thesis, Ohio State Univ., 1928. (43) (55)
27. Bazett, H. C. **Temperature, its measurement and control in science and industry.** New York: Reinhold, 489-501. (78)
28. Beau, M. Recherches statistiques pour servir a l'histoire de l'epilepsie et de l'hysterie. **Arch. gen. med., Ser. 2,** 1836, 11: 328-352. (36) (57)
29. Benedict, F. G. Studies in the body temperature influence of the inversion of the daily routine; the temperature of night-workers. **Amer. J. Physiol.,** 1904, 11: 145-169. (6) (48) (78)
30. Berman, A. The relation of time estimation to satiation. **J. exp. Psychol.** 1939, 25: 281-293. (90)
31. Bexton, W. M., Heron, W. & Scott, T. H. Effects of decreased variation in the sensory environment. **Canad. J. Psychol.,** 1954, 8: 70. (67)
32. Biel, W. C. & Warrick, M. J. Studies in perception of time delay. **Amer. Psychologist,** 1949, 4: 303. (86)
33. Bitterman, M. E. Fatigue defined as reduced efficiency. **Amer. J. Psychol.,** 1944, 57: 569-571. (48)
34. Bitterman, M. E. & Soloway, E. The relation between frequency of blinking and effort expended in mental work. **J. Exp. Psychol.,** 1946 36: 134-136. (51) (53)
35. Bjerner, B. Alpha depression and lowered pulse rate during delayed actions in a serial reaction test: A study in sleep deprivation. **Acta Physiologica Scandinavica,** 1955, 19: Suppl. No. 65. (9) (54) (70)
36. Bjerner, B. & Swenson, A. Shift work and rhythmus. **Acta. Medica Scandinavica, G (Suppl. 278),** 1955, 145: 102-107. (48)
37. Bjerner, B., Holm, A. & Swenson, A. Diurnal variation in mental performance. **Brit J. Indust. Med.,** 1955, 12: 103-110. (51)
38. Bliss, E. L. & Clark, L. D. Studies of sleep deprivation relationship to schizophrenia. **AMA Arch Neuro. Psych.,** 1959, 81: 348. (57) (70)
39. Bloom, W. Shift work and the sleep-wakefulness cycle. **Personnel.** 1961, 38(2): 24-31. (69)
40. Bloom, W. The effects of shift schedules on oral temperature and reaction time. Paper read at Southwestern Psychol. Assn., Fort Worth, April 1962. (48) (78)
41. Bolton, T. L. Rhythm. **Amer. J. Psychol.,** 1894, 6: 145-238. (64)
42. Borel, H. **Rhythm of Life,** New York, 1927. (31)
43. Boring, L. D. & Boring, G. Temporal judgments after sleep. **Studies in Psychology, (Titchner Commemorative Volume),** Worcester, Mass., 1917. 255-279. (95)
44. Brazier, M. A. B. **The electrical activity of the nervous system.** New York, Macmillan, 1951. (33)
45. Brindley, G. S. Intrinsic 24-hour-rhythms in human physiology and their relevance to the planning of working programmes. **RAF Inst. Aviat. Med., Flying Personnel Res. Comm. Rep., No. 871,** 1954. (7)
46. Broadbent, D. C. **Perception and communication.** New York: Pergamon Press, 1958. (57)
47. Brockman, M. C. Closed cycle biological systems for space feeding. **Food Tech.** 12, 1958, 453-458. (10)
48. Brody, S. **Bioenergetics and growth.** Baltimore, Md.; Reinhold, 1945. (11)
49. Brown, F. A. A study of the mechanism involved in shifting of the phases of the endogenous daily rhythm by light stimuli. **Biol. Bull.,** 1954, 106(3): 308-317. (6) (15)
50. Brown, F. A., Webb, M. & Bennet, M. F. Proof for an endogenous com-

- ponent in persistent solar and lunar rhythmicity in organisms. *Proc. Natl. Acad. Sci.*; 1955, 41(2): 93-100. (15)
51. Brown, F. A. Jr. Biological Chronometry, *American Naturalist*, 1957, 91: 129-133. (41)
 52. Brown, F. A. Jr. Living Clocks; *Science*, 1959, 130: 1535-1544. (41)
 53. Brown, W. Temporal and accentual rhythm. *Psychol. Rev.*, 1911, 18: 336-346. (79)
 54. Brubaker, F. B. Physiologic rhythm. *Med. Times*, 1906, 34: 175. (61)
 55. Bulban, E. J. Vivid hallucinations plague test subjects. *Aviat. Week*, 1960, 72(5): 57-65. (57)
 56. Bulger, H. A. & Stiles, P. G. The comparative performance of muscles subjected to rhythmic or arrhythmic stimulation. *Amer J. Physiol.*, 1920, 51: 430-433. (43) (52) (66)
 57. Bunning, E. **Rhythmic and synthetic processes in growth**. Princeton Univ. Press N. J., 1957. (11)
 58. Burch, N. R. & Greiner, T. H. A bioelectric scale of human alertness. Concurrent recordings of the EEG and GSR. *Psychiat. Res. Reps. Amer. Psychiat. Assn. R.*, 1960, 183. (1) (33)
 59. Burchard, J. E. Re-setting a biological clock. Ph.D. thesis, Princeton University, 1958. (42)
 60. Burns, N. Environmental requirements of sealed cabins for space and orbital flights—a second study. Part I: Rationale and habitability aspects of confinement study. *Naval Air Materiel Center Rep. No. NAMC-AGEL-413*, 1959. (26)
 61. Byington, S. L. Development of Rhythm. *Proc. Nat. Educ. Ass.*, 1897, 774. (11)
 62. Cannon, W. B. Organization and physiological homeostasis. *Physiol. Revs.*, 1929, 9: 379-431. (22)
 63. Carlson, A. & Johnson, V. **The machinery of the body** (3rd ed.) Chicago: Univ. of Chicago Press, 1948. (41)
 64. Carmichael, L., Kennedy, J. L. & Mead, L. C. Some recent approaches to the experimental study of human fatigue. *Science*. 1949, 110: 445. (48)
 65. Cary, H. Estimation of centidiurnal periods of time: an experimental investigation of the time-sense. *J. Phil. Psychol. Sci. Meth.* 1918, 15: 241-245. (69) (80)
 66. Cathcart, E. P. & Dawson, S. Persistence: A characteristic of remembering. *Brit. J. Psychol.*, 1928, 18: 262-275. (13)
 67. Caveness, J. M. **Rhythmic studies of life**, New York, 1923. (31)
 68. Chafe'i, A. M. Psychosynthesis and personal rhythm. *Egypt J. Psychol.*, 1947, 2: 473-486. (29) (41) (68)
 69. Charles, E. The hour of birth, a study of the distribution of time of onset of labor and of delivery throughout the 24-hour period. *Brit. J. Prev. Med.*, 1957, 7: 43-55. (4)
 70. Chiles, W. D. Experimental studies of prolonged wakefulness. *USAF WADC Tech. Rep. No. 55-395*, 1955. (70)
 71. Chiles, W. D. The effects of sleep deprivation on performance of a complex mental task. *USAF WADC Tech. Note No. 55-423*, 1955. (51) (70)
 72. Chweitzer, A., Laugier, H. & Vahl, F. Comparison du travail ergographique a rythme uniforme avec le travail a intervalle variable, pour une fréquence de soulevements imposée. *Travail Hum.*, 1935, 3: 181-190. (46)
 73. Clark, B. & Graybiel, A. The break-off phenomenon; a feeling of separation from the earth experienced by pilots at high altitudes. *J. Aviat. Med.*, 1957, 28: 121. (67)
 74. Cohen, B. D., Rosenbaum, G. Dobie, S. I. & Gottlieb, J. S. Sensory isolation

- hallucinogenic effects of a brief procedure. **J. Nerv. Ment. Dis.**, 1959, 129: 286. (57) (67)
75. Coleman, W. M. The psychological significance of bodily rhythm. **J. Comp. & Physiol. Psychol.**, 1921, 213-220. (64)
76. Curtis, J. N. Duration and the temporal judgment. **Amer. J. Psychol.** 1916, 27: 1-47. (84)
77. Darby, H. H. Studies in diurnal rhythm No. 1. **Anat. Rec.**, 1933, 55: 154. (64)
78. Darrow, C. W. Galvanic and circulatory responses to sensory and ideational stimulation. **J. Exp. Psychol.**, 1929, 12: 295 (9) (20)
79. Darrow, C. W. The equation of the galvanic skin reflex curve. I. The dynamics of reaction in relation to excitation-back-ground. **J. Gen. Psychol.**, 1937, 16: 285-309. (20)
80. Davis, L. E. & Hosselyn, P. D. How fatigue effects productivity: A study of manual work patterns. **Personnel**, 1953, 30: 54-59. (49)
81. Dempsey, C. A., Griener, T. H., Burch, N. R., Chiles, D. & Steel, J. The human factors in long range flight. **J. Aviat. Med.**, 1956, 27: 18-22. (25)
82. Dixon, J. M. Emotional values in rhythmic forms, **Method Rev.**, 1905, 65: 858-867. (58)
83. Dodge, R. The diurnal rythm. In elementary conditions of human variability. **Dodge Papers**, Vol. 3, 1918-1928, New York: Columbia University Press, 1927. (46)
84. Dodge, R. Elementary conditions of Human Variability. **Dodge Papers**, Vol. 3, 1918-1928. New York: Columbia University Press, 1927. (46)
85. Dougherty, J. E. Effects of increased flying time on aviation instructors. **War Med.**, 1943, 3: 297-302. (21)
86. Drew, G. C. Experimental study of mental fatigue. **RAF Inst. Aviat. Med.**, Flying Personnel Res. Comm. Rep., No. 227. 1940. (51)
87. Dubois, F. S. Rhythmic cycles and periods in health and disease. **Amer. J. Psychiat.**, 1959, 116: 114-119, Vol. 34. (63)
88. Dunlap, K. Reaction to rhythmic stimuli with attempt to synchronize. **Psychol. Rev.**, 1910, 17: 319-335. (77)
89. Dunlap, K. Rhythm and time. **Psychol. Bull.**, 1911, 8: 239-242. (79)
90. Dunlap, K. The shortest perceptible time interval between two flashes of light. **Psychol. Rev.**, 1915, 22: 226-250. (43) (93)
91. Edwards, A. S. Effects of the loss of one hundred hours of sleep. **Amer. J. Psychol.**, 1941, 54: 80-91. (70)
92. Eilbert, L. R., Glaser, R. & Hanes, R. M. Research on the feasibility of selection of personnel for duty at isolated stations. **USAF PTRC Tech. Rep.**, No. 57-4, 1957. (60)
93. Elton, P. M. A study of output in silk weaving. **Great Britain, Industr. Hlth. Res. Bd. Rep.**, No. 9, 1920. (47)
94. Eron, L. D. & Auld, F. Jr. A study of the thematic apperception test stories and sentence completions of subjects in operation hideout. **USN MRL Report No. 243**, February 1954. (60) (68)
95. Farmer, E. A. A comparison of different shift systems in the glass trade. **Great Britain, Industr. Hlth. Res. Bd. Rep.**, No. 24, 1924. (48)
96. Faucett, R. E. & Newman, P. P. Operation Hideout: Preliminary report. **USN MRL Report No. 228**, July 1953. (68)
97. Fere, C. L'influence du rythme sur le travail. **Annee psychol.**, 1902, 8: 49-105. (30)
98. Fere, C. L'influence du changement de rythme sur le travail suivant l'etat de fatigue. **C. R. Soc. Biol. Paris**, 1904, 56: 597-599. (30)
99. Fessard, A. Sur l'activite periodique de certains systemes vivants. **Bull. Soc.**

- philos., Paris, 1934, 117: 136-142. (31)
100. Filer, R. J. & Meals, D. W. The effect of motivating conditions on the estimation of time. *J. expl. Psychol.*, 1949, 39: 327-331. (90)
 101. Finan, J. L., Finan, S. C. & Hartson, L. D. A review of representative tests used for the quantitative measurements of behavior-decrement under conditions related to aircraft flight. *USAF AMC Tech. Rep.*, No. 5830, 1949. (60)
 102. Fleson, W. B. C., Gluerk, Jr. & Halberg, R. Persistence of daily rhythms in eosinophile count and rectal temperature during "regression" induced by intensive electroshock therapy. *Physiologist*, 1957, 1: 28. (37) (78)
 103. Forel, C. L. Le rythme; etude psychologique. *J. Psychol. Neurol. Lpz.*, 1920, 26: 1-104. (61)
 104. Fraser, D. C. A study of deterioration of performance in aircrew. Interim report. I. Validation of techniques. *RAF Inst. Aviat. Med. Flying Personnel Res. Comm. Rep.*, No. 804, 1952. (25)
 105. Fraser, D. C. & Samuel, G. D. Aircrew fatigue in long range maritime and reconnaissance; 10. Effects on vigilance. *RAF Inst. Aviat. Med. Flying Personnel Res. Comm. Rep.*, No. 907.10, 1956. (25)
 106. Fraser, D. C. A study of fatigue in aircrew. IV. Overview of the problem. *RAF Inst. Aviat. Med., Flying Personnel Res. Comm. Rep.* No. 984, 1957. (25)
 107. Fraser, D. C. Environmental stress and its effect on performance. *Occupat. Psychol.*, 1957, 31: 248-255. (14) (49)
 108. Fraisse, P. Les erreurs constantes dans la reproduction de courts intervalles temporels. *Arch. Psychol., Geneve.*, 1948, 32: 161-176. (80)
 109. Fraisse, P., Pichot, P. & Clairouin, G. Les aptitudes rythmiques. Elude comparee des oligophrenes et des enfants normaux. *J. Psychol. Norm. path.*, 1949, 42: 309-330. (60)
 110. Fraisse, P. Rhythmes auditifs et rythmes visuels. *Ornee psychol.*, 1950, 49: 21-42. (16) (18)
 111. Freeman, G. L. & Hovland, C. I. Diurnal variations in performance and related physiological processes. *Psychol. Bull.*, 1934, 31: 777-799. (46)
 112. Freeman, G. L. Compensatory reinforcements of muscular tension subsequent to sleep loss. *J. Exp. Psychol.*, 1932, 15: 267-283. (70)
 113. Freeman, G. L. Is there a diurnal rhythm? *Psychol. Bull.*, 1933, 30: 660. (64)
 114. Freeman, G. L. & Wonderlic, E. F. Periodicity and Performance. Minor studies from the psychological laboratory of Northwestern University. *Amer. J. Psychol.*, 1935, 47: 149-151. (46)
 115. Freeman, G. L. Changes in tension pattern and total energy expenditure during adaptation to distracting stimuli. *Amer. J. Psychol.* 1939, 52: 354-360. (15)
 116. Freeman, G. L. The relationship between performance level and bodily activity level. *J. Exp. Psychol.*, 1940, 26: 602-608. (47)
 117. Freeman, G. L. *The energetics of human behavior*. Ithica: Cornell University Press, 1948. (48)
 118. French, J. D., Verseano, M. & Magoun, H. W. An extralemniscal sensory system in the brain. *Amer. Med. Ass. Arch. Neurol. Psychiat.*, 1953, 69: 505-18. (33)
 119. French, J. D., Verseano, M. & Magoun, H. W. A neural basis of the anesthetic state. *Amer. Med. Ass. Arch. Neurol. Psychiat.*, 1953, 69: 519-29. (35)
 120. Fryer, D. Conscious activity in coordination of repetitive mental work

- and rhythmic timing. *Brit. J. Psychol.*, 1937, 28: 150-166. (30)
121. Gagge, A. P., & Moriyama, J. M. The Annual and Diurnal Variations of Ions in an Urban Community. *Terrest. Mag. & Atmos. Elec.*, 1935, 295-306. (15)
 122. Gaito, J., Hanna, T. D., Bowe, R. & Greco, S. Environmental requirements of sealed cabins for space and orbital flight: Part 3. Performance and habitability aspects of extended confinement. *Naval Air Material Center Rep.*, No. NAMC-ACEL-385, 1958. (26) (67)
 123. Garfiel, E. The measurement of motor ability. *Arch. Psychol.*, 1923, 62. (52)
 124. Gardner, W. A. Influence of the thyroid gland on the consciousness of time. *Amer. J. Psychol.*, 1935, 47: 698-701. (91)
 125. Gault, R. H. & Goodfellow, L. D. An empirical comparison of audition, vision, and touch in the discrimination of temporal patterns and ability to reproduce them. *J. gen. Psychol.*, 1938, 18: 41-47. (16) (17) (18) (80)
 126. Gerathewohl, S. J. Work proficiency in space cabin simulator. *Aerospace Med.*, 1959, 30: 722, 735. (27)
 127. Gibson, R. B. Body temperature periodicity. *J. Med. Sci.*, 1905, 129: 1048. (78)
 128. Gilliland, A. R. Some factors in estimating short time intervals. *J. exp. Psychol.*, 1940, 27: 243-255. (93)
 129. Gilliland, A. R. Some factors in time estimation. *Psychol. Bull.*, 1940, 37: 580. (80)
 130. Gilliland, A. R. & Humphreys, D. W. Age, sex, method, and interval as variables in time estimation. *J. Genet. Psychol.*, 1943, 63: 123-130. (92)
 131. Glueck, B. C., Reiss, H. & Bernard, L. E. Regressive electric shock therapy. *Psychiat. Quart.*, 1957, 31: 117-136. (37)
 132. Goetzel, F. R. & Stone, F. Diurnal variations in acuity of olfaction and food intake. *Gastroenterology*, 1947, 9: 444-453. (17) (43)
 133. Goldmark, J. & Hopkins, M. Studies in industrial physiology: Fatigue in relation to working capacity. 1. Comparison of an eight-hour plant and a ten-hour plant. *USPHS Publ. Hlth. Bull.*, No. 106, 1920. (48)
 134. Gorham, W. A., Orr, D. B. & Trittippoe, T. G. Research on behavior impairment due to stress: An experiment in long-term performance. Washington, D. C.: *Amer. Inst. Res.*, Contract No. AF 41(657)-39, Proj. No. 7707 (USAF WADC), 1958. (14) (49)
 135. Greenwood, M. & Woods, H. M. The incidence of industrial accidents upon individuals with specific reference to multiple accidents. *Industr. Fatigue Research Bd.*, Rep. No. 4, 1919. (62)
 136. Griffith, C. R. Timing as a phase of skill. *J. Educ. Psychol.*, 1932, 23: 204-213. (50)
 137. Griffith, G. M. & Fox, J. T. Rhythm in epilepsy. *Lancet*, 1938, 235: 409-416. (36)
 138. Guilford, J. P. Spatial symbols in the apprehension of time. *Amer. J. Psychol.*, 1926, 37: 420-423. (94)
 139. Guilford, J. P. & Zimmerman, W. S. Fourteen dimensions of temperament. *Psychol. Monogr.*, 1956, 70: 417. (56)
 140. Gulliksen, H. The influence of occupation upon the perception of time. *J. exp. Psychol.*, 1927, 10: 52-59. (88)
 141. Gumbel, E. J., Greenwood, J. A. & Durand, D. A. The circular normal distribution; theory and tables. *J. Amer. Statistical Ass.*, 1953, 48: 313. (32)
 142. Haight, E. C. Individual differences in motor adaptations to rhythmic stimuli. *Res. Quart. Amer. phys. Educ. Ass.*, 1944, 15: 38-43. (29)

143. Halberg, F. Circadian rhythm: a determinant of response to environmental agents. *Proc. First Int. Sympos. Submarine and Space Med.* New London. (3)
144. Halberg, F. Some physiological and clinical aspects of 24 hour periodicity. *Lancet*, 1953, 73: 20-32. (3)
145. Halberg, F., Halberg, E. & Gully, R. J. Effects of modifications of the daily routine in healthy subjects and in patients with convulsive disorder. *Epilepsia*, 1953, Ser. 32, 150. (6) (36)
146. Halberg, F. & Visscher, M. B. Some physiologic effects of lighting. *Proc. First int. Photo Biol. Congr.*, Amsterdam. 1954, 396. (15)
147. Halberg, F. & Howard, R. B. 24-hour periodicity and experimental medicine: examples and interpretations. *Postgraduate Medicine* 1958, 24: 349-358 (63)
148. Halberg, F., Jacobsen, E., Wadsworth, G. & Bitter, J. J. Audiogenic abnormality spectra, 24-hour periodicity, and lighting. *Science* 1958, 128: 657 (15)
149. Halberg, F. Physiologic 24-hour periodicity in human beings and mice; the lighting regimen and daily routine. *Photo Periodicity and Related Phenomena in Plant and Animals*. AAAS. Withrow, Washington, 1959. 803-878. (15)
150. Hall, G. S. & Jastrow, J. Studies of rhythm. *Mind* 1886 11: 55-62 (64)
151. Hall, W. W. The time sense. *J. Ment Sci.* 1927 73: 421-428 (101)
152. Hammond, J. Jr. Light regulation of hormone secretion. *Vitamins and Hormones*, 1954. 12: 157-206 (15)
153. Hanna, T. D. & Gaito, J. Performance and habitability aspects of extended confinements in sealed cabins. *Aerospace Med.* 1960. 31: 399-406. (26) (67)
154. Harding, D. W. Rhythmization and speed of work. *Brit. J. Psychol.* 1932. 23: 262-278. (30)
155. Harris, D. F. On rhythm. *Sci. Mon.* 1920 17: 63-104 (64)
156. Harton, J. J. The influence of the difficulty of activity on the estimation of time. *J. Exp. Psychol.* 1938 23: 270-287. (83)
157. Harton, J. J. The influence of the degree of unity of organization on the estimation of time. *J. Gen. Psychol.* 1939 21: 428-433. (90)
158. Harton, J. J. An investigation of the influence of success and failure on the estimation of time. *J. Gen. Psychol.* 1939. 21: 51-62. (83) (90)
159. Harton, J. J. The relation of time estimates to the actual time. *J. Gen. Psychol.* 1939, 21: 219-224. (94) (101)
160. Hastings, J. W. & Sweeney, B. M. On the mechanism of temperature independence in a biological clock. *Proc. Natl. Acad. Sci. U. S.*, 1957, 43: 804-810. (78)
161. Hauty, G. T., Steinkamp, Jr., Hawkins, W. R. & Halberg, F. Circadian performance rhythms in men adapting to an 8-hour day. *Fed. Proc. Circadian*, 1960, 19: 54. (6)
162. Heinlein, C. P. A new method of studying rhythmic responses of children together with an evaluation of the method of simple observation. *J. genet. Psychol.*, 1929, 36: 205-228. (11)
163. Heiser, F. & Cohen, L. H. Diurnal variations of skin temperature. *J. industr. Hyg.*, 1933, 15: 243-254. (78)
164. Hellbrugge, T. The development of circadian rhythms in infants. *Cold Spring Harbor Symp. on Quart Biol.*, Vol. 25, 1960. (5) (11)
165. Henry, C. E. & Darrow, C. W. EEG relationships to five autonomic variables. *Amer. Psychol.*, 1947 2: 421. (39)
166. Hoagland, H. *Pacemakers in relation to aspects of behavior*. New York, Macmillan, 1935. (41)

167. Hoagland, H. Pacemakers in human brain waves in normals and in general paretics. *Amer. J. Physiol.*, 1936, 116: 604-615. (41)
168. Hoagland, H. Rhythmic behavior of the nervous system. *Science*, 1948, 108: 599. (33)
169. Holaday, D. A., Volk, H., & Mandell, J. Electrical activity of the small intestine with special reference to the origin of rhythmicity. *Depts. Anesth., Surg. & Radio.*, Columbia U., Coll. of Phys. & Surg., N. Y. City. (33)
170. Hollingworth, H. L. Inaccuracy of movement. *Arch. Psychol.*, 1909, 13. (52)
171. Honigswald, R. *Vom Problem des Rhythmus*. Teubner, Leipzig: 1926. (64)
172. Hovland, C. I. & Freeman, G. L. Diurnal variations in performance and related physiological processes. *Psychol. Bull.* 31, 777-799. (46)
173. Hughes, C. W. Rhythm and health. In Schullian, D. M. & Schoen, M. *Music and Medicine*. New York: Henry Schuman, 1948. (63)
174. Husband, R. W. The effects of musical rhythms and pure rhythms on bodily sway. *J. gen. Psychol.*, 1934, 11: 328-366. (52)
175. Husband, R. W. The comparative value of continuous versus interrupted sleep. *J. exp. Psychol.*, 1935, 18: 792-796. (69)
176. Huxtable, Z. L., White, M. H., & McCartor, M. A. A re-performance and re-interpretation of the Aria experiment in mental fatigue with three subjects. *Psychol. Monogr.*, 1946, 59: No. 275. (51)
177. Iaworski, G. & Liberson, W. Recherches sur le pouvoir de discrimination des rythmes des mouvements volontaires. *Travail hum.*, 1936, 4: 163-195. (52)
178. Irwin, O. C. The amount and nature of activities on newborn infants under certain external stimulating conditions during the first ten days of life. *Genet. Psychol. Monogr.*, 1930, 8: 1. (47)
179. Isaacs, E. The nature of the rhythm experience. *Psychol. Rev.*, 1920, 27: 270-299. (64)
180. Isikawa, T. Studies on the influence of day and night shift system upon the physiological functions of labourers. *Institute of Science of Labour, Report No. 3*, Kurashiki, Japan, 1931. (48)
181. Jackson, K. F. Aircrew fatigue in long range maritime reconnaissance pilot performance. *RAF Inst. Aviat. Med., Flying Personnel Res. Comm. Rep.*, No. 907.2, 1956. (25)
182. James, H. E. O. Regularity and rhythmicity. *Brit. J. Psychol.*, (Gen. Sec.), 1926, 17: 1-9. (64)
183. Jenny, E. D. Environmental influences on number of birth and on sex rates at birth. *Arch. Julius Klausshiff*, 1943, 18(3/4): 714-718. (4) (15)
184. Jersild, A. T. & Bienstock, S. F. Development of rhythm in young children. *Child Developm. Monogr.*, 1935, 22. (11)
185. Johnson, H. M. & Swan, T. H. Sleep. *Psychol. Bull.*, 1930, 27: 1-39. (69)
186. Jones, B. F. & Flinn, R. H. et al. Fatigue and hours of service of interstate truck drivers. *USPHS Publ. Hlth. Bull.*, No. 265, 1941. (48)
187. Jores, A. Die ursache der rhythmik vom gesichtspunkt des menschen. *Dtsch. Med. Wschr.*, 1938, 64: 995-996. (64)
188. Kalmus, H. New research in diurnal periodicity. *Proc. 2nd Conference for Biological Rhythms Research*. 1939, 1-7. (64)
189. Kalmus, H. Repetition, Autonomy and Synchronization in the living World. *Acta. Med. Scand. (Suppl.)*, 1953, 278: 19-25. (77)

190. Kalmus, H. Two mathematical models for biological rhythms. **Cold Spring Harbor Symp. on Quant. Biol.**, Vol 25, 1960. (32)
191. Kanjibal, P. The emergence of natural muscular rhythm: a preliminary report. **Indian J. Psychol.**, 1944, 19: 78-85. (66)
192. Kawasima, S. The influence of time intervals upon the perception of arm motion. **Jap. J. Psychol.**, 1937, 12: 270-289. (45)
193. Kawczynsky, M. Essai comparatif sur l'origine et l'histoire des rythmes, Paris, 1889. (64)
194. Keightley, A. **The Rhythm of life.** London, 1907. (31)
195. Kennedy, M. H. An investigation of the pattern of variation of cycle performance times for a repetitive manual operation. **Unpubl. master's thesis, Georgia Inst. Tech.**, 1597. (46)
196. Kent, A. F. S. Interim report on an investigation of industrial fatigue by physiological methods. British Home Office, London, 1915. Cited by F. Frankfurter and J. Goldmark. **The case for the shorter work day.** U. S. Supreme Court Brief, Vol 1, October, 1915. (48)
197. Kimball, H. H. The duration and intensity of twilight. **Monthly Weather Rev.**, 1916, 44: 614-620. (15)
198. King, P. D. Increased frequency of births in the morning hours. **Science.** 1956, 123(3205): 985-986. (4)
199. Kinsey, J. L. Report of psychiatric studies on operation hideout. **USN MRL Report No. 230**, July 1953. (68)
200. Kleitman, N. Studies on the physiology of sleep. VII. Diurnal variation in performance. **Amer. J. Physiol.**, 1933, 104: 449-456. (73)
201. Kleitman, N., Titelbaum, S., & Feinelson, P. Diurnal variation in reaction time and it's relation to body temperature. **Amer. J. Physiol.**, 1935, 113: 82. (54) (78)
202. Kleitman, N., Mullin, F. J., Cooperman, N. R. & Titelbaum, S. (Eds.) Seasonal differences in sleep characteristics. **Sleep characteristics.** Chicago: Univ. of Chicago Press, 1937. (74)
203. Kleitman, N., Titelbaum, S., & Hoffman, H. The establishment of the diurnal temperature cycle. **Amer. J. Physiol.**, 1937, 119: 48-54. (78)
204. Kleitman, N., Titelbaum, S., & Feinelson, P. The effect of body temperature on reaction time. **Amer. J. Physiol.**, 1938, 121: 495-501 (54) (78)
205. Kleitman, N. **Sleep and wakefulness.** Chicago: Univ. Chicago Press, 1939. (69)
206. Kleitman, N. & Ramsaroop, A. Periodicity in body temperature and heart rate. **Endocrinology**, 1948, 43: 1. (9) (78)
207. Kleitman, N. The sleep-wakefulness cycle of submarine personnel. In Panel on Psychology and Physiology. **A survey report on human factors in undersea warfare.** Washington, D. C.: NRC Comm. on Undersea Warfare, 329-341, 1949. (28) (69)
208. Kleitman, N. Biological rhythms and cycles. **Physiol. Rev.**, 1949, 29(1): 1-27. (41) (61)
209. Kleitman, N. Biological rhythms and cycles. **Amer. Physiol. Soc.**, 1949, 29: 12-13, 25-26. (41) (61)
210. Kleitman, N. & Jackson, D. P. Body temperatures and performance under different routines. **J. Appl. Physiol.**, 1950, 3: 309-328. (46) (78)
211. Kleitman, N. & Jackson, D. P. Variations in body temperature and in performance under different watch schedules. **USN, NMRI, Project NM 004005.01.-02**, 15 Feb 1950 (28) (46) (78)
212. Kleitman, N. & Kleitman, E. Effect of non-twenty-four hour routines of living on oral temperature and heart rate. **J. Appl. Physiol.**, 1953, 6: 283-291. (9)

213. Kleitman, N. & Engelmann, L. G. Sleep characteristics of infants. *J. Appl. Physiol.*, 1953, 6: 269-282. (48) (75)
214. Kleitman, N. The sleep cycle. *Amer. J. Nurs.*, 1960, 60:677-679. (69)
215. Kleitman, N. Patterns of dreaming. *Sci. Amer.*, Nov. 1960, 203: 82-88. (72)
216. Klopsteg, P. E. The measurement of very short time intervals. *Physiol. Rev.*, 1920, 15: 12-23. (89)
217. Klotter, K. Theoretical analysis of some biological models. *Cold Spring Harbor Symp. on Quant. Biol.*, Vol. 25, 1960.
218. Kluver, H. "Mechanisms of Hallucination" in Q. McNemar & M. A. Merrill, ed. *Studies in Personality*. New York, McGraw-Hill, 1942. (57)
219. Korngold, S. Influence du genre de travail sur l'appréciation des grandeurs temporelles. *Travail hum.*, 1937, 5: 18-34. (90)
220. Korotkin, I. I. On the physiological conditions of disappearance and restitution of acoustic after-illusions relating to rhythm frequency in man. *Fiziol. Zh. U.S.S.R.* 1940, 28: 58. (40)
221. Korotkin, I. I. On the physiological mechanism of acoustic after-illusion relating to rhythm frequency in man. *Fiziol. Zh. U. S. S. R.*, 1940, 28: 43-57. (40)
222. Kossoris, M. D. *Studies of the effects of long working hours (Part 2)*. U. S. Dept. of Labor Bull., No. 791-A, 1944. (48)
223. Kossoris, M. D. & Kohler, R. F. Hours of work and output. U. S. Dept. Labor, *Bu. Labor Statist., Bull.* No. 917, 1947. (48)
224. Kowalski, W. J. The effect of delay upon the duplication of short temporal intervals. *J. exp. Psychol.*, 1943, 33: 239-246. (86)
225. Langdon-Down, M. & Brain, W. R. Time of day in relation to convulsions in epilepsy. *Lancet*, 1929, 216(1): 1029-1032. (36)
226. Lauer, A. R. Personal "tempo" of rhythm. *Proc. Ia. Acad. Sci.*, 1933, 40: 192-193. (29)
227. Lehman, E. L. *Notes on the Theory of Estimation*. Associated Student Store, Univ. Calif., Berkeley, Chap. II, 1-20, 1950. (99)
228. Lehman, G. Diurnal rhythm in relation to working capacity. *Acta Med Scandinav.*, 1953, (Suppl. 278) 145: 108-109. (48)
229. Leuret, M. Recherches sur l'épilepsie. *Arch. gen. Med.*, Ser. 4, 1843, 2: 32-35. (36)
230. Levin, M. Diurnal rhythm in epilepsy. *Amer. J. Psychiat.*, 1956, 113: 243-245. (36)
231. Levy, E. Z., Ruff, G. E., & Thaler, V. H. Studies in human isolation. *J. Amer. Med. Ass.*, 1959, 169: 236. (67)
232. Lewis, F. H. Affective characteristics of rhythm. *Psychol. Bull.*, 1933, 30: 679-680. (58)
233. Lewis, F. H. Some characteristics of rhythmic perception. *Amer. J. Psychol.*, 1935, 47: 139-142. (43)
234. Lewis, H. E. & Masterton, J. P. The influence of a polar environment on sleep-wakefulness patterns in man. *J. Physiol.*, 1955, 129: 82. (74)
235. Lewis, P. R. & Lobban, M. C. Persistence of a 24-hour pattern diuresis in human subjects living on a 22-hour day. *J. Physiol.*, 1954, 125: 34-35. (6) (12)
236. Lewis, P. R. & Lobban, M. C. The effects of prolonged periods of life on abnormal time routines upon excretory rhythms in human subjects. *Quart. J. exp. Physiol.*, 1957, 42: 356-371. (19) (68)
237. Lewis, P. R. & Lobban, M. C. Dissociation of diurnal rhythms in human subjects living on abnormal time rou-

- tines. *Quart. J. exp. Physiol.*, 1957, 42: 371-386. (6)
238. Lewis, P. R. & Lobban, M. C. The effects of exercise on diurnal excretory rhythms in man. *J. Physiol.*, 1958, 143: 8-9. (19)
239. Liberson, W. Attitude mentale et rythme des mouvements volontaire. *C. R. Soc. Biol.*, Paris, 1935, 118: 1047-1049. (56)
240. Lindsley, D. B., Anderson, I. H., et al. Radar operator "fatigue": **The effect of length and repetition of operating periods of efficiency of performance.** OSRD Rep. No. 3334, 1944. (48)
241. Lourie, R. S. The role of rhythmic patterns in childhood. *Amer. J. Psychiat.*, 1949, 105: 653-660. (11) (12)
242. Luby, E. D. Frohman, C. E., Grisell, J. L., Renzo, J. E., & Gottlieb, J. S. Sleep deprivation: effects on behavior, thinking, motor performance, and biological energy transfer systems. *Psychosom Med.*, 1960, 22: 182-192. (70)
243. MacDougall, R. The relation of auditory rhythm to nervous discharge. *Psychol. Rev.*, 1902, 9: 460-480 (15) (40)
244. MacDougall, R. Rhythm, time and number. *Amer. J. Psychol.*, 1902, 13: 88-97. (79)
245. MacDougall, R. The affective quality of auditory rhythm in its relation to objective forms. *Psychol. Rev.*, 1903, 10: 15-36. (58)
246. MacDougall, R. Sex differences in the sense of time. *Science*. 1904, 19: 707-708. (92)
247. MacKenzie, J. S. Notes on the problem of time. *Mind*. 1912, 21: 329-346. (101)
248. Mackworth, N. H. **Researches on the measurement of human performance.** Med. Res. Council spec. Rep. Ser. No. 268. London: His Majesty's Stationery Office, 1950. (46)
249. Magoun, H. W. The ascending reticular activating system. *Proc. Ass. Res. Nerv. Ment. Dis.*, 1952, 30: 480-492. (33)
250. Makayama, S., Furu, T., & Tomaru, F. An experimental study on rhythmic forms of successive lights. *Jap. J. exp. Psychol.*, 1938, 5: 15-34. (15)
251. Marsh, H. D. **The Diurnal Course of Efficiency.** The Science Press, N. Y., 1906, Arch. Phil., Psychol., and Scientific Methods, Columbia Univ. Press, 1906, 95. (50)
252. Mather, W. M. P. The forty-eight hour week: A year's experiment and its results at the Salford Iron Works, Manchester. Manchester, 1894. Cited by J. Goldmark, **Fatigue and efficiency, a study in industry.** New York: Russell Sage Foundation, 1912. (48)
253. McFarland, R. A. **Human factors in air transportation.** New York: McGraw-Hill, 1953. (25)
254. McGilvary, E. B. Time and the experience of time. *Philos. Rev.*, 1914, 23: 121-145. (94) (101)
255. McGrath, S. D., Wittkower, E. D., & Cleghorn, R. A. Some Observations on aircrew fatigue in the RCAF—Tokyo airlift. *J. Aviat. Med.*, 1954, 25: 23-37. (25)
256. McIntosh, B. B., Milton, J. L., & Cole, E. L. **Pilot performance during extended periods of instrument flight.** USAF WADC Tech. Rep., No. 6725, 1952. (25)
257. Mellette, H. C., Hult, B. K., Askovitz, S. I., & Horvath, S. M. Diurnal variations in body temperature. *J. Appl. Physiol.*, 1951, 3: 665-675. (78)
258. Menaker, W. & Menaker, A. Lunar periodicity in human reproduction: a likely unit of biological time. *Amer. J. Obst. & Gyn.*, 1919, 77: 905-917. (15)
259. Miles, E. W. Preferred rates in rhythmic response. *J. Gen. Psychol.*, 1937, 16: 427-469. (29)
260. Mills, J. N. Diurnal rhythm in urine

- flow. *J. Physiol.*, 1951, 113: 528-536. (12)
261. Mills, J. N. & Stanbury, S. W. Persistent 24 hour renal excretory rhythm on a 12 hour cycle of activity. *J. Physiol.*, 1952, 117: 22-37. (6) (12)
 262. Miner, J. B. Motor, visual and applied rhythms. *Monogr. Supp. Psychol. Rev.*, 1903, 5: 1-106. (18) (66)
 263. Miyake, I. Researches on rhythmic action. *Stud. Yale Psychol. Lab.*, 1902, 10: 1-48. (64)
 264. Murry, E. J., Williams, H. L., & Lubin, A. Body temperature and psychological rating during sleep deprivations. *J. exp. Psychol.*, 1958, 8: 56(3), 271-273. (70) (78)
 265. Myers, C. S. A. The rhythm-sense of primitive peoples. *Atti. d. cong. internaz. di psicol.*, 1905 Roma, 1906, 5: 287-289. (65)
 266. Myerson, P. G. & Landau, D. Tapping rhythms in neuropsychiatric cases. *J. Nerv. Ment. Dis.*, 1949, 109: 277 (Abstract). (38)
 267. Myerson, P. G. & Landau, D. Tapping rhythms in neuropsychiatric patients. *Arch. Neurol. Psychiat.*, Chicago. 1950, 63: 351. (38)
 268. National Industrial Conference Board. *The hours of work problems in five major industries*. NICB Res. Rep., No. 27, 1920. (48)
 269. Nelson, M. L. The effect of subdivisions of the visual estimate of time. *Psychol. Rev.*, 1902, 9: 447-459. (96)
 270. Neustatter, W. L. Seven hundred and fifty psychoneurotics and ten weeks fly-bombing. *J. Ment. Sci.*, 1946, 92: 110-117. (56)
 271. Nichols, H. The psychology of time. *Amer. J. Psychol.*, 1891, 3: 453-530, and 1892, 4: 60-112. (101)
 272. Omwake, K. T. Effect of varying periods of sleep on nervous stability. *J. Appl. Psychol.*, 1932, 16: 623-632. (71)
 273. Osborne, E. E. *The output of women workers in relation to hours of work in shell making*. Great Britain, Industr. Hlth. Res. Bd. Rep., No. 2, 1919. (48)
 274. Oswald, I. Experimental studies of rhythm, anxiety and cerebral vigilance. *J. Ment. Sci.*, Apr. 1959, Vol. 34, 105: 269-294. (1) (58)
 275. Pavlov, M. Sur l'origine de sens du rythm. *J. de Psychol.*, 1927, 24: 719-730. (64)
 276. Pavlov, M. Sur le role de l'energie des ondes puslatif dans la perception immediate du temps. *J. de Psychol.*, 1928, 25: 391-424. (80)
 277. Petersen, W. F. *The Patient and the Weather. Mental and Nervous Diseases*. Ann Arbor, Mich: Edwards Bros., Vol 3, 1934. (63)
 278. Philip, B. R. The anchoring of absolute judgments of short temporal intervals. *Bull. Canad. Psychol. Ass.*, 1944, 4: 25-28. (81)
 279. Philip, B. R. & Lyttle, J. W. The relation between reaction times and duplication times for short intervals. *Bull. Canad. Psychol. Ass.*, 1945, 5: 40-42. (54) (85)
 280. Phillips, L. & Elmadjian, F. A Rorschach tension score and the diurnal lymphocyte curve in psychotic subjects. *Psychosom. Med.*, 1947, 9: 364-371. (60)
 281. Piaget, J. Les trios structures fondamentales de la vie psychique rythme, regularisation et groupenier. *Schweie. Z. Psychol. Anwerd.*, 1942, 1: 9-21. (56)
 282. Pierach, A. Biological rhythm effects of night work and shift changes on the health of workers. *Acta Med. Scandinav. (Suppl. 307)*, 1955, 152: 159-166. (63)
 283. Pieron, H. Les problemes psychol-physiologiques de la perception du temps. *Annee psychol.*, 1923, 24: 1-26. (101)
 284. Pillsbury, W. B. Attention waves as

- means of measuring fatigue. *Amer. J. Psychol.*, 1903, 14: 277-288. (1)
285. Pittendrigh, C. S. & Bruce, V. G. An oscillator model for biological clocks. **Rhythmic and Synthetic Processes in Growth**. Princeton: Princeton Univ., 75-109, 1957. (32)
286. Pittendrigh, C. S. Perspectives in the study of biological clocks. **Symposium on perspectives in marine biology**. Berkeley: Univ. of Calif., 239-268, 1958. (41)
287. Pittendrigh, C. S., Bruce, V. G. & Kaus, P. On the significance of transients in daily rhythms. *Proc. Natl. Acad. Sci. U. S.*, 1958, 44: 965-973. (8)
288. Pittendrigh, C. S. Biological contributions to a general model. **Cold Spring Harbor Symp. on Quant. Biol.** Vol 25, 1960. (32)
289. Plata, J. Un appareil pour l'étude graphique du rythme. *Travail hum.* 1936, 4: 418-420. (3)
290. Points, T. C. Twenty-four hours in a day. *Obstet and Gynecol.*, 1956, 8(2): 245-248. (3)
291. Polakov, W. N. Making work fascinating as the first step toward reduction of waste. *Mech. Engrng.*, 1921, 43: 731-734. (50)
292. Porter, E. L. H. Factors in the fluctuation of fifteen ambiguous figures. *Psychol. Rev.*, 1938, 2: 231-253. (60)
293. Postman, L. Estimates of time during a series of tasks. *Amer. J. Psychol.*, 1944, 57: 421-424. (85)
294. Poz, S. Un nouvel appareil pour la détermination du rythme et de la vitesse des mouvements, le "tempometre." *Sovetsl. Psikhotekh.*, 1933, 6: 369-370. (64)
295. Quayle, P. P. A note on the measurement of small time intervals. *J. Franklin Inst.*, 1927, 203: 407-412. (89)
296. Rashevsky, N. Is the concept of an organism as a machine a useful one. *Sci. Monthly*, 1955, 80: 32-35. (32)
297. Ray, J. T., Martin, O. E. Jr. & Alluisi, E. A. **Human performances as a function of the work-rest cycle**. Natl. Academy of science; Natl. Res. Council Publ. 882, Washington, D. C., 1961. (Lockheed) Aircraft Corp., Georgia Div., Human Factors Research Dept. (48)
298. Reiser, O. L. Time, space and Gestalt. *Phil. Sci.*, 1934, 1: 197-225. (101)
299. Rimoldi, H. J. A. Personal tempo. *Amer. Psychol.*, 1949, 4: 236. (29)
300. Robertson, R. B. Consciousness and the sense of time. *Sci. Mon.*, N. Y., 1923, 16: 649-657. (82)
301. Ruckmick, C. A. The role kinaesthesia in the perception of rhythm. *Amer. J. Psychol.*, 1913, 24: 305-359. (66)
302. Ruckmick, C. A. **Visual rhythm, in Studies in Psychology: Titchner Commemorative Vol.**, Worcester, 231-254, 1917. (18)
303. Ruckmick, C. A. The rhythmical experience from the systematic point of view. *Amer. J. Psychol.*, 1927, 39: 356-366. (64)
304. Ruff, G. E. & Levy, E. Z. Psychiatric evaluation of candidates for space flight. *Amer. J. Psychiat.*, 1959, 116: 385. (60)
305. Ruff, G. E., Levy, E. Z. & Thaler, V. H. Studies of isolation and confinement. *Aerospace Med.*, 1959, 30: 599-604. (67)
306. Russell, B. On the experience of time. *Monist*, 1915, 25: 212-233. (101)
307. Sand, A. Autonomous rhythmical activity of sense organs. *Nature*, 1938, 141: 285-286. (2)
308. Saussure, R. de Letemps en general, et le temps bergsonien en particulier, *Arch. de Psychol.*, 1914, 14: 277-296. (101)
309. Scharhter, M. Etude sur les rythmies du jour ou du sommeil chez L'enfant *Encephale*. 1954, 43: 173-191. (75)

310. Schaefer, V. G. & Gilliland, A. R. The relation of time estimation to certain physiological changes. **J. exp. Psychol.**, 1938, 23: 545-552. (91)
311. Schaff, G. & Marbach, G. Search for a method of evaluation of the quantity of sleep I. Influence of deprivation of sleep on different quantitative expressions of the spontaneous mobility of the sleeper. **C. R. Sor. Biol. (Para. 154:202-6)**, 1960 (Fr). (71)
312. Schilling, R. Prevention of fatigue in industry. **Modern Mgmt.**, 1946, 6: 17-19. (51)
313. Schmitt, O. H. General properties of oscillating systems. **Cold Spring Harbor Symp. on Quant. Biol. Vol. 25**, 1960. (32)
314. Scripture, E. W. Observations on rhythmic action. **Yale Psychol. Lab. Stud.**, 1899, 1: 102-108. (64)
315. Sears, C. H. Studies in rhythm. **Ped. Sem.**, 1901, 8: 1-44. (64)
316. Sears, C. H. Contribution to the psychology of rhythm. **Amer. J. Psychol.**, 1902, 13: 28-61. (61)
317. Seashore, C. E. Motor ability, reaction-time, rhythm, and time-sense. **Univ. Ia. Stud. Psychol.**, 1899, 2: 195-253. (54) (85)
318. Seashore, R. H. Studies in motor rhythm. **Psychol. Monogr.**, 1926, 36: 142-189. (66)
319. Semeonoff, B. Sensitivity of the dark adapted eye during a prolonged period of observation. **Nature**, 1941, 147: 454-455. (18)
320. Sharp, G. W. G. Persistence of the diurnal rhythm of flow of urine. **Nature**, 1962, 193: 37-41. (12) (48)
321. Shaw, J. W. The effect of continued performance in a task of air traffic control. **RAF Inst. Aviat. Med., Flying Personnel Res. Comm. Rep.**, No. 883, 1954. (51)
322. Shaw, M. A. & Wrinch, F. S. Contributions to the psychology of time. **Univ. Toronto Stud. Psychol. Series**, 1899, 2: 105-153. (101)
323. Sivadon, P. & Balier, C. Etude sur le travail rythme. **Travail hum.**, 1955, 18: 224-229. (30)
324. Skinner, B. F. The experimental analysis of behavior. **Amer. Scientist**, 1957, 45: 343-371. (64)
325. Slutsky, E. The summation of random causes as the source of cycle processes. **Econometric**, 1937, 7: 105-146. (32)
326. Smith, F. L. Sweet, A. L. & Bartlett, N. R. The discrimination of small differences in the time for mechanical stimulation. **J. exp. Psychol.**, 1949, 39: 569-574. (93)
327. Smith, M. & Vernon, M. D. The two-shift system in certain factories. **Great Britain, Industr. Hlth. Res. Bd. Rep.**, No. 47, 1928. (48)
328. Spencer, L. T. An experiment in time estimation using different interpolations. **Amer. J. Psychol.**, 1921, 32: 557-562. (99)
329. Squire, C. R. A genetic study of rhythm. **Amer. J. Psychol.**, 1901, 12: 492-589. (21)
330. Sollberger, A. A study of biological variation. **Acta Anat.**, 1954, 22: 127-143. (8) (41)
331. Sollberger, A. Statistical aspects of diurnal biorhythm. **Acta Anat.**, 1955, 22: 97-127. (32)
332. Sollberger, A. Diurnal changes in biological variability. **Acta Anat.**, 23: 259-287. (41)
333. Stambak, M. Le probleme du rythme dans le developpement de l'enfant et dans les dyslexies d'evolution. **En-france**, 1951, 4: 480-502. (11)
334. Steinkamp, G. R., Hawkins, W. R., Hauty, G. R., Burwell, R. R. & Ward, J. E. Human experimentation in the space cabin simulator: Development of life support systems and results of initial seven-day flight. **USAF Sch. Aviat. Med., Rep. No. 59-101**. 1959. (27)
335. Stetson, R. H. A motor theory of rhythm and discrete sensation. **Psychol. Rev.**, 1905, 12: 250-270. (32)

336. Stevens, H. C. The relations of the fluctuations of judgments in the estimation of time intervals to vasomotor waves. *Amer. J. Psychol.*, 1902, 13: 1-27. (91)
337. Stevens, L. T. On the time-sense. *Mind*. 1886, 11: 393-404. (101)
338. Stewart, I. C. Sex differences in substitution and time estimation. *J. comp. Psychol.*, 1926, 6: 243-265. (92)
339. Storey, T. A. **Studies in voluntary muscular contraction**. University Press, Stanford U. Press, Calif. 62, 1904. (2) (66)
340. Stott, L. H. Time-order errors in the discrimination of short tonal durations. *J. exp. Psychol.*, 1935, 18: 741-766. (44) (97)
341. Strother, C. R. & Kriegman, L. S. Rhythmokinesis in stutterers and non-stutterers. *J. Speech Disorders*. 1944, 9: 239-244. (76)
342. Stroud, J. M. & Hedlun, J. M. A measure of the accuracy of rhythmic tapping. *Amer. Psychol.*, 1950, 5: 466. (38)
343. Strughold, H. Physiological day-night cycle in global flights. *J. Aviat. Med.*, 1952, 23: 464-473. (21)
344. Strughold, H. **The physiological day-night cycle in global flights**. Space Sciences Lab. Gen. Electric. Randolph Field, Tex., USAF Sch. of Aviat. Med. Special Report, 1952. (25)
345. Sturt, M. Experiments on the estimation of duration. *Brit. J. Psychol.*, 1923, 13: 382-388. (80)
346. Sturt, M. **The psychology of time**. New York: Harcourt, 1925. (101)
347. Swift, E. J. & McGeogh, J. A. An experimental study of the perception of filled and empty time. *J. exp. Psychol.*, 1925, 8: 240-249. (98)
348. Swindle, P. F. On the inheritance of rhythm. *Amer. J. Psychol.*, 1913, 24: 180-203. (21)
349. Swindle, P. F. Time perception and rhythm. *Psychol. Bull.*, 1920, 17: 244-250. (101)
350. Tasiro, T. (On the temporal factors in the Gestalt of movement). *Jap. J. Psychol.*, 1937, 12: 290-308. (101)
351. Thomae, H. Ubei rhythmus und takt im antriebsgeschehen. *Arch. ges. Psychol.*, 1943, 112: 51-76.
352. Thomson, L. G. The relationship of variations in skin temperature to general fatigue. Unpublished doctoral dissertation, Univ. of Texas, 1952. (78)
353. Tiller, P. & Figur, A. **Environmental requirements of sealed cabins for space and orbital flights. A second study. Part 4: Concentration of epinephrine and norepinephrine in urine during confinement in a simulated space chamber**. Naval Air Medical Center, Philadelphia: Air Crew Equip. Lab., 1959, (Project TED NAM AE-1403, Report NAMC-ACEL-416). (26)
354. Tindall, G. M. Rhythm for the restless. *Person. J.*, 1937, 16: 120-124. (44)
355. Triplett, D. The relation between the physical pattern and the reproduction of short temporal intervals: A study in the perception of filled and unfilled time. *Psychol. Monogr.*, 41, No. 4; *Univ. Ia Stud. Psychol.*, 1931, No. 14: 201-265. (93)
356. Tufts College, **Fatigue Tests: Continuous 13½ hours tracking fatigue test (OEMsr-581)**. Rep 2. 1942; Publ. Bd. No. L77775.) Washington: Dept of Commerce, 1947. (48)
357. Tufts College Laboratory. **Fatigue Tests; Three day test of fatigue effects under conditions of long hours on duty, limited sleep**. Nat. Defense Res. Comm. Rep., Contract OEMsr-581, No. 3, 1947. (48)
358. Turchioe, R. M. The relation of adjacent inhibitory stimuli to the central tendency effect. *J. gen. Psychol.*, 1948, 39: 3-14. (58) (101)
359. Tuttle, F. H. Rhythm; Division of measure, *Musician*, 1910, 15: 17. (64)

360. Tyler, D. B. The fatigue of prolonged wakefulness. *Fed. Proc.*, 1947, 6: 218 (Abstract). (70)
361. Tyler, D. B., Goodman, J. & Rothman, T. The effect of experimental insomnia on the rate of potential changes in the brain. *Amer. J. Physiol.*, 1947, 149: 185-193. (70)
362. Uexkuell, J. Time, Number and Measurement. *Psyche*, 1925, 5(4): 315-326. (80)
363. Urban, F. M. & Yerkes, R. M. Time estimation and its relation to sex, age, and physiological rhythms. *Harvard Psychol. Stud.*, 1906, 2: 405-430. (92) (101)
364. Utterback, R. & Ludwig, G. (A comparative study of schedules for standing watches aboard submarines, based on body temperature cycles). NM004 003 (1), Naval Medical Research Inst., Bethesda, Md., 1949. (28)
365. Van Loon, J. H. (The diurnal rhythm of body temperature in night-workers). *Acta Physiologica et Pharmacologica Neerlandica*, 1959, 9(2): 302. (78)
366. Vernon, H. M. *Fatigue and efficiency in the iron and steel industry*. Great Britain, Industr. Hlth Res. Bd. Rep. No. 5, 1920. (48)
367. Vernon, H. M. *The speed of output to altered hours of work*. Great Britain, Industr. Fatigue Res. Bd. Rep. No. 6, 1920. (79)
368. Verrier, P. Les variations temporelles du rythme. *J. Psychol. norm. path.*, 1913, 10: 16-24. (64)
369. Verrier, P. Les variations intensives du rythme. *J. Psychol. norm. path.*, 1914, 11: 193-198. (64)
370. Wallian, S. S. Rhythm as a factor in the domain of therapeutics. *Arch. Physiol. Therap.*, 1906, 4: 178-180. (63)
371. Wallian, S. S. The dominance of rhythm in organic nature and as a therapeutic factor. *J. Adv. Therap.*, 1907, 25: 83-90. (63)
372. Wallin, J. E. W. Experimental studies of rhythm and time. I. *Psychol. Rev.*, 1911, 18: 100-131. (64)
373. Wallin, J. E. W. Experimental studies of rhythm and time. II. *Psychol. Rev.*, 1911, 18: 202-222. (64)
374. Wallin, J. E. W. Experimental studies of rhythm and time. III. *Psychol. Rev.*, 1912, 19: 271-298. (64)
375. Walter, V. T. & Walter, W. G. The central effects of rhythmic sensory stimulation. *Electroenceph. clin. Neurophys.*, 1949, 1: 57. (31)
376. Warren, N. & Clark, B. Blocking in mental and motor tasks during a 65-hour vigil. *J. exp. Psychol.*, 1937, 21: 97-105. (57) (70)
377. Webb, H. M. & Brown, G. A. Jr. Timing long-cycle physiological rhythm. *Physiol. Rev.*, 39: 127-158. (64)
378. Weidensell, J. *Studies in rhythm*. Cincinnati: Schnett & Co., 1917. (64)
379. Weiss, B. & Laties, V. G. Behavior Thermoregulation. *Science*, Apr 1961, 133: 1338-1344. (33) (78)
380. Welford, A. T., Brown, R. A. & Gabb, J. E. Two experiments on fatigue as affecting skilled performance in civilian air crew. *Brit. J. Psychol.*, 1950, 40(4): 195-211. (25)
381. Welsh, J. H. Diurnal rhythms. *Quart. Rev. Biol.*, 1938, 13: 123-139. (64)
382. Weston, H. C. *A study of efficiency in fine linen weaving*. Grt. Brit., Industr. Hlth. Res. Bd. Rep., No. 20, 1922. (50)
383. Wever, R. Possibilities of phase-control, demonstrated by an electric model. *Cold Spring Harbor Symp. on Quant. Biol. Vol. 25*, 1960. (32)
384. Weybrew, B. B. Accuracy of time estimation and muscular tension. *Percep. Mot. Skls.*, 1963, 17: 118. (91)
385. Weybrew, B. B. Psychological problems associated with prolonged periods of marine submergence. In *Unusual Environments and Human Behavior*, Burns, N. M., Chambers, R. M. &

- Hendel, E. (Edits.) The Free Press of Glenco, 1963. (68)
386. Whitely, P. L. & Anderson, J. C. The influence of two different interpolations upon time estimation. *J. gen. Psychol.*, 1930, 4: 391-401. (99)
 387. Whiting, H. F. & English, H. B. Fatigue tests and incentives. *J. exp. Psychol.*, 1925, 8: 33-49. (48)
 388. Wilkinson, M. Concerning rhythm. *Touchstone*, 1921, 8: 378-380. (64)
 389. Williams, H. M. A study in the prediction of motor rhythmic performance of school children. *J. genet. Psychol.*, 1933, 43: 377-388. (11)
 390. Winslow, C. E. A. & Herrington, L. P. *Temperature and Human Life*. Princeton: Princeton U. Press, 1949. (78)
 391. Wolff, P. & Levine, J. Nocturnal gastric secretions of ulcer and nonulcer patients under stress. *Psychosom Med.*, 1955, 17(3): 218-226. (14) (49)
 392. Wolfe, H. M. Time factors in conditioning finger-withdrawal. *J. gen. Psychol.*, 1930, 4: 372-378. (54)
 393. Woodrow, H. A quantitative study of rhythm. *Arch. Psychol.*, 1909, 14: 66. (64)
 394. Woodrow, H. *A quantitative study of rhythm; the effect of variations in intensity, rate, and duration*, New York, 1909. (64)
 395. Woodrow, H. Time and rhythm. *Psychol. Bull.*, 1918, 15: 111-113. (50)
 396. Woodrow, H. Behavior with respect to short temporal stimulus-forms. *J. exp. Psychol.*, 1928, 11: 167-193. (15)
 397. Woodrow, H. The reproduction of temporal intervals. *J. exp. Psychol.*, 1930, 13: 473-490. (80)
 398. Woodrow, H. Individual differences in the reproduction of temporal intervals. *Amer. J. Psychol.*, 1933, 45: 271-281. (87)
 399. Woodrow, H. The temporal indifference interval determined by the method of mean error. *J. exp. Psychol.*, 1934, 17: 167-188. (32) (101)
 400. Woodrow, H. The common factors in fifty-two mental tests. *Psychometrika*, 1939, 4: 99-108. (60)
 401. Wundt, W. *Lectures on human and animal psychology* (trans. Creighton and Titchener), London, 1894. (64)
 402. Wyatt, S. *Variations in efficiency in cotton weaving*. Great Britain, Industr. Hlth. Res. Bd. Rep. No. 22, 1923. (50)
 403. Wyatt, S. *Incentives in repetitive work*. Great Britain, Industr. Hlth. Res. Bd. Rep., No. 69, 1934. (50)
 404. Yule, G. U. On a method of investigating periodicities in disturbed series. *Proc. Roy. Soc. A.*, 1927, 226: 267-298. (32)
 405. Ziolkow, H. U. Zur Bedeutung rhythmischer Faktoren in der Neurose. *Nervenarzt*, 1956, 27: 323-325. (56)

APPENDIX A

- Dunlap, K. Rhythm and time. **Psychol. Bull.**, 1911, 8-239-242.
- Dunlap, K. Time and rhythm. **Psychol. Bull.**, 1916, 13-206-208.
- Mursell, J. L. Psychology of music. **Psychol. Bull.**, 1932, 29-218-241.
- Ruckmick, C. A. A bibliography of rhythm. **Amer. J. Psychol.**, 1913, 24-508-519; 1918, 29-214-218; 1924, 35-407-413.
- Weitz, J. & Fair, K. W. A survey of studies of rhythm. **Human Resources Research Center**, Research Bull. 51-4, March 1951, Lackland Air Force Base, San Antonio, Texas, ATI-101160.
- Weybrew, B. B. & Parker, J. W. Bibliography of sensory deprivation, isolation and confinement. **USN Medical Research Laboratory**, Memo Report No. 60-1, January 1960.
- Winthrow, R. B. (ED.) **Photoperiodism and related phenomenon in plants and animals**. Washington, D. C.: American Association for the Advancement of Science, 1959.